Descriptions

This is Super Junction Power MOSFET in a TO-247 Plastic Package.

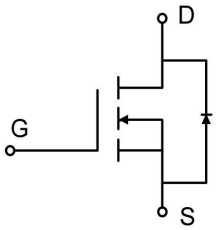
Features

- VDS =650V @ Tj,max,
- Typ. RDS(on) =0.024Ω
- 100% UIS tested
- Pb-free plating, Halogen free

Applications

- LED Lighting, Charger, Adapter
- PC, LCD TV, Server

Equivalent Circuit



Pinning

TO-247

Marking

See Marking Instructions.

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	CT60R029HA	Unit
Drain-source voltage	VDSS	600	V
Continuous drain current[1)] (TC = 25°C) (TC = 100°C)	ID	90 50	A A
Pulsed drain current[2)]	IDM	295	A
Gate-source voltage	VGS	±30	V
Avalanche energy, single pulse[3)]	EAS	1100	mJ
Avalanche energy, repetitive[2)]	EAR	1.4	mJ
Avalanche current, repetitive[2)]	IAR	7	A
Power dissipation (TC = 25°C) - Derate above 25°C	PD	430 3.44	W W/°C
Operating and storage temperature range	Tj, Tstg	-55 to +150	°C
Continuous diode forward current	IS	90	A
Diode pulse current	IS,pulse	295	A

Thermal Characteristics

Parameter	Symbol	CT60R029HA	Unit
Thermal resistance, junction-to-case	RθJC	0.29	°C/W
Thermal resistance, junction-to-ambient	R JA	62	°C/W

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
Drain-source breakdown voltage	BVDSS	VGS=0 V, ID=1 mA	600	-	-	V
Gate threshold voltage	VGS(th)	VDS=VGS, ID=0.25mA	2.3	3.3	4.3	V
Drain cut-off current	IDSS	VDS=600 V, VGS=0V, Tj = 25°C Tj = 125°C	 - -	 - 200	 10 -	μA
Gate leakage current, forward	IGSSF	VGS=20V, VDS=0V	-	-	300	nA
Gate leakage current, reverse	IGSSR	VGS=-20V, VDS=0V	-	-	-300	nA
Drain-source on-state resistance	RDS(on)	VGS=10 V, ID=30A Tj = 25°C	-	0.024	0.029	Ω
Dynamic characteristics						
Input capacitance	Ciss	VDS= 100V, VGS=	-	8200	-	pF
Output capacitance	Coss	0V, f = 1 MHz	-	250	-	
Reverse transfer capacitance	Crss		-	4.2	-	
Turn-on delay time	td(on)	VDD = 300V, ID =	-	90	-	ns
Rise time	tr	30A RG = 25Ω,	-	79	-	
Turn-off delay time	td(off)	VGS=10V	-	460	-	
Fall time	tf		-	75	-	
Gate charge characteristics						
Gate to source charge	Qgs	VDD=480V, ID=30A,	-	35	-	nC
Gate to drain charge	Qgd	VGS=0 to 10V	-	42	-	
Gate charge total	Qg		-	142	-	
Gate plateau voltage	Vplateau		-	5.0	-	V
Reverse diode characteristics						
Diode forward voltage	VSD	VGS=0 V, IF=30A	-	-	1.2	V
Reverse recovery time	trr	VR=50V, IF=30A,	-	390	-	ns
Reverse recovery charge	Qrr	dIF/dt=100A/μs	-	7.9	-	μC
Peak reverse recovery current	Irrm		-	40	-	A

Notes:

1. Limited by $T_{j\,max}$. Maximum duty cycle D=0.5.
2. Repetitive rating: pulse width limited by maximum junction temperature.
3. I_{AS} = 7 A, V_{DD} = 50V, R_G = 25Ω, starting T_j = 25°C.

Electrical Characteristic Curve

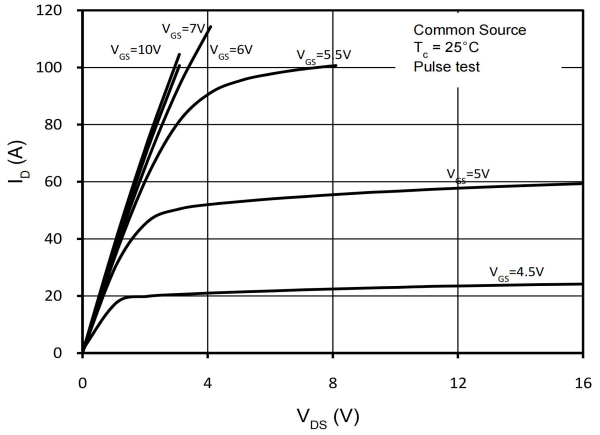


Figure 1.On-Region Characteristics

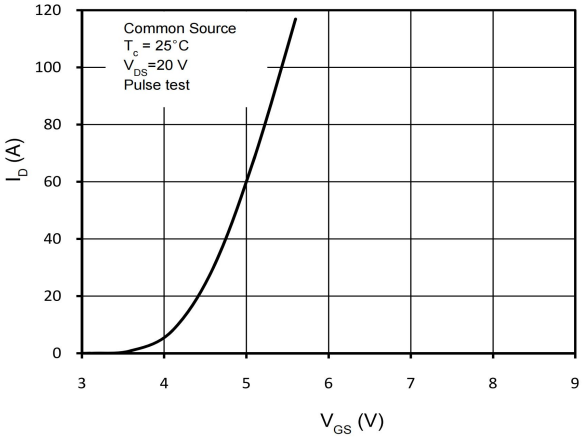


Figure 2. Transfer Characteristics

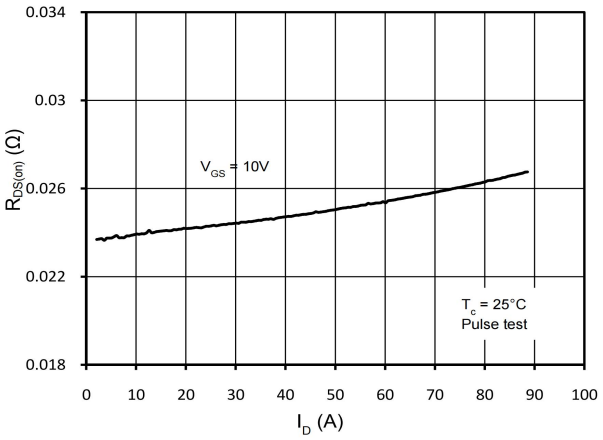


Figure 3. Static Drain-Source On Resistance

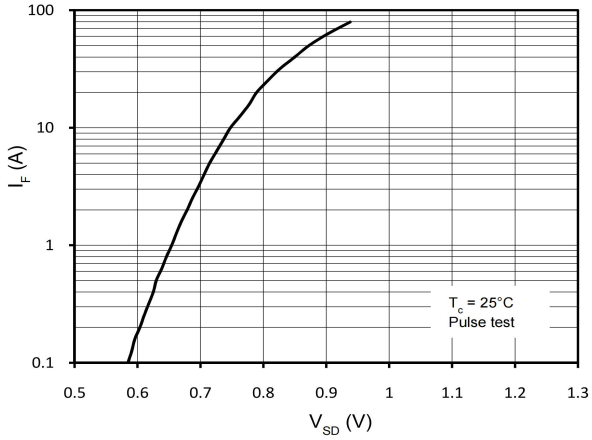


Figure 4. Body- Diode Forward Characteristics

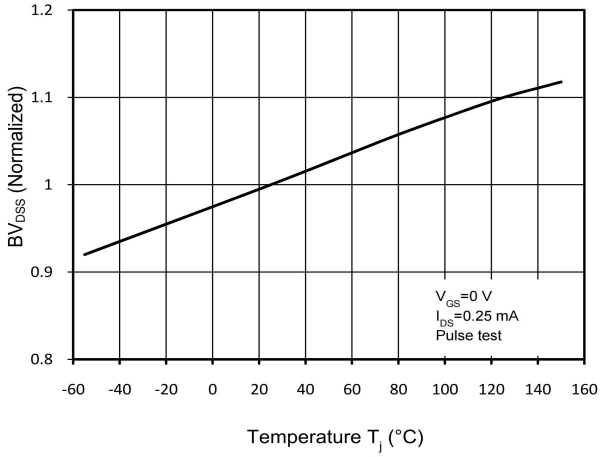


Figure 5. Normalized BV_{DSS} vs. Temperature

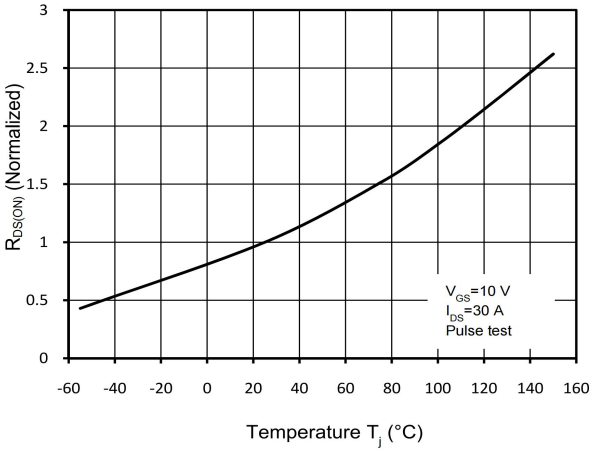


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Electrical Characteristic Curve

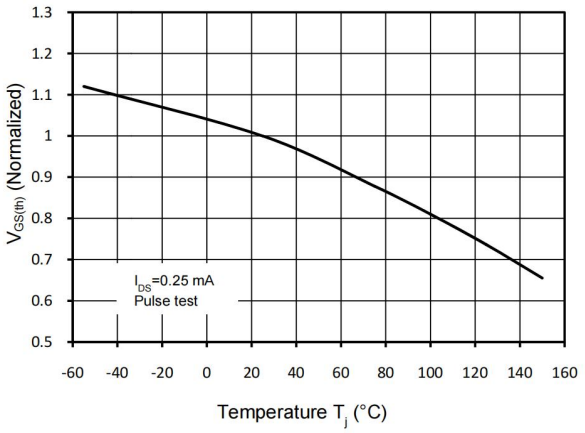


Figure 7. Threshold Voltage vs. Temperature

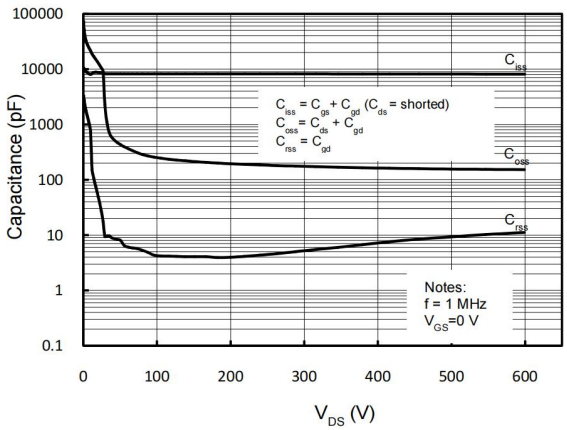


Figure 8. Capacitance Characteristics

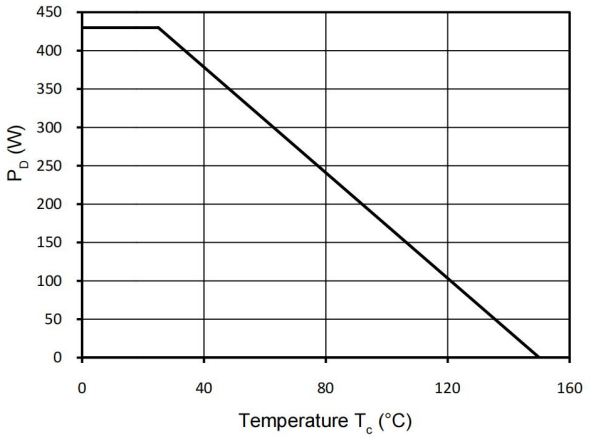


Figure 9. Power Dissipation

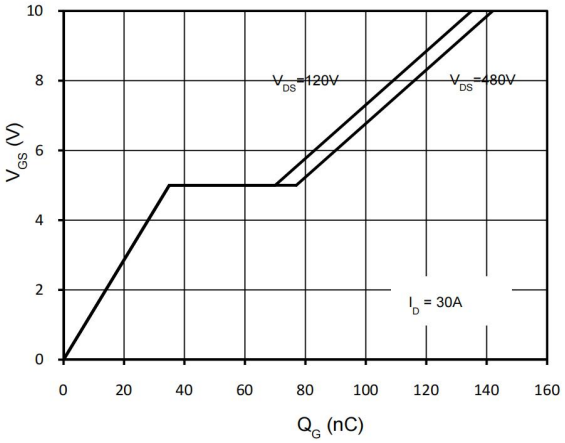


Figure 10. Gate Charge Characteristics

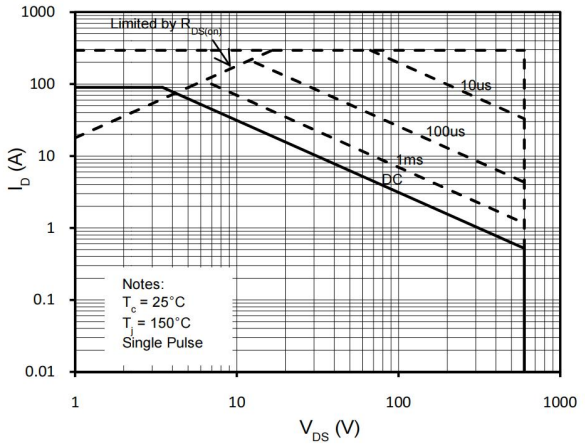


Figure 11. Maximum Safe Operating Area

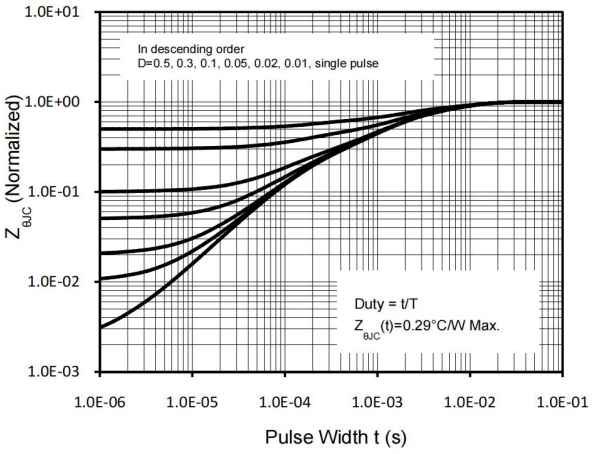
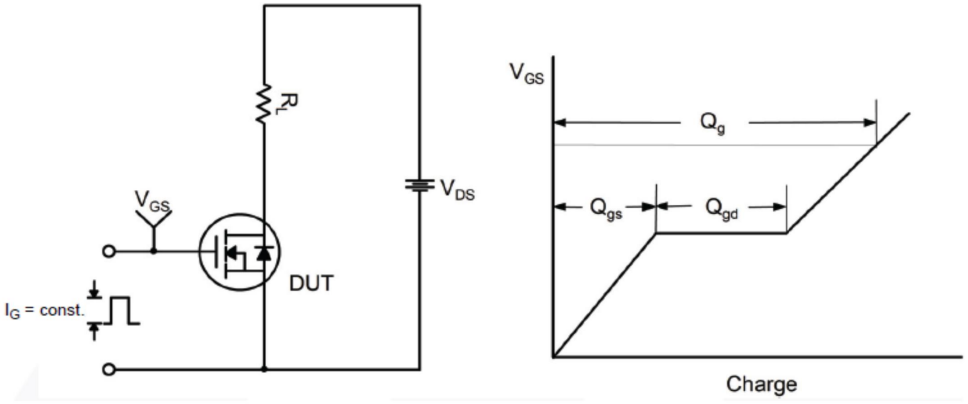


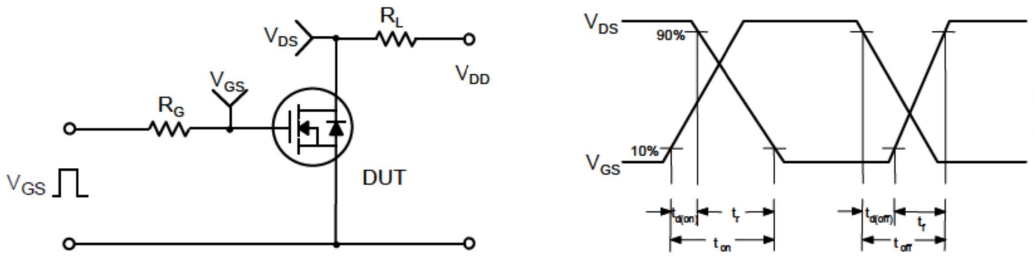
Figure 12. Transient Thermal Response Curve

Test Circuit

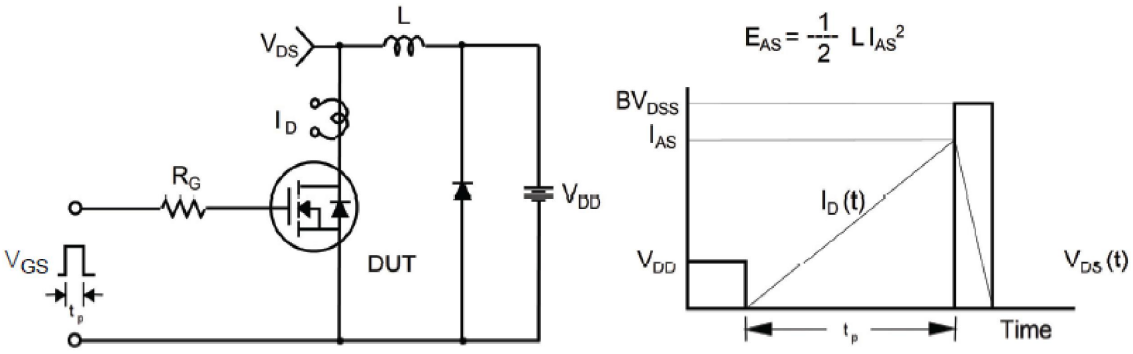
Gate Charge Test Circuit & Waveform



Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Marking code

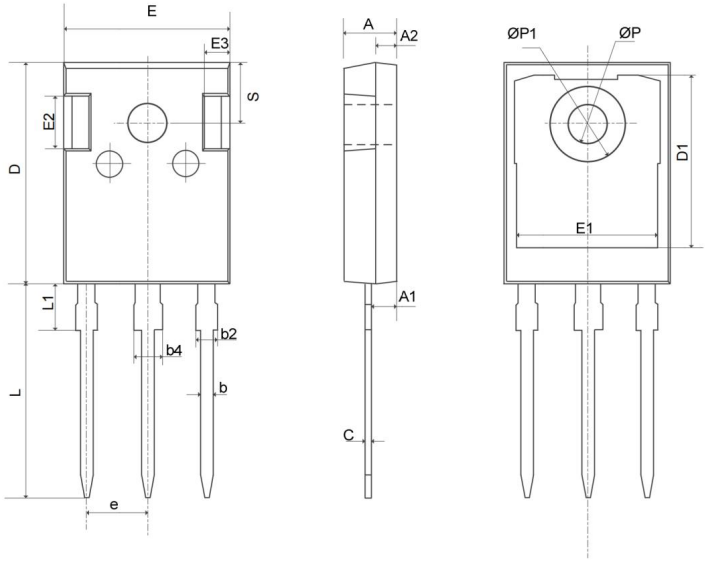
Note:

COT:	Company
60R029:	Product Type.
*****:	*: Inner Code * : Year Code **: Week Code **: Lot Code.

Ordering Information

Part	Package	Marking	Packing method
CT60R029HA	TO-247	60R029	Tube

Mechanical Dimenslons for To-247



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	4.80	5.21
A1	2.21	2.61
A2	1.85	2.16
b	1.07	1.36
b2	1.91	2.41
b4	2.87	3.38
c	0.51	0.75
D	20.70	21.30
D1	16.25	17.65
E	15.50	16.13
E1	12.38	13.60
E2	3.68	5.20
E3	1.00	2.70
e	5.44BSC	
L	19.62	20.32
L1	—	4.40
ØP	3.40	3.80
ØP1	—	7.30
S	6.15BSC	